miliar enough now, but I had the hard heat as inconceivable." work of first introducing it and persuading people of its utility. I had to interest the city councils and the railroads in it, but I finally got an electric clock established at | there. The method of preserving and ap- | The Philistine. the observatory, and soon had the time of plying it economically has yet to be inthe city regulated by it. Before this each | vented. My experiments on Mount Whitjeweler had his own time. Each of the ney, in the Sierra Nevadas, showed that if partures of trains. Soon after I started it for every square yard of ground. We hear It was extended along the lines of the rall- a great deal about the immense power from ways until we were regulating clocks as the recent utilization of Niagara, but the far as Chicago and Philadelphia from sun power which is, so to speak, wasted Pittsburg. To do this we had to have the daily on this little District of Columbia is them for five minutes at 9 o'clock in the Manhattan or that occupied by London day. The system soon spread to other gines of the world. So far there have been may claim that I did tolerably well in a printing press. Ericson made a solar enscientific affairs, for first and last I thus in the pumping up of the waters on desert got for my little observatory over \$60,000. | lands. The probability is that the day will means for scientific research." THE SUN OFTEN BEHIND TIME.

"The observatory clock was regulated by zation."

sun before I was ready to make any an-

"Can you give me an idea how far off it

along the nerve to the brain almost indistance before they reach you, and the there with a velocity many hundred times of an eye. In my studies of the sun spots 1 had to have a paper and pencil before me of those which fly without flapping their is none that has the beauty and the meanas I looked through the telescope to record these changes as they went on, in order to these changes as they went on, in order to | visible expenditure of force. catch their varying expressions on the sun's face.

"I cannot describe to you the wonders which are going on there. I found, howchanical drawing which was all I knew, have published have been illustrated with

my own drawings of them." A LOOK AT A SUN SPOT. tary Langley had one of these former draw- air. ings of a sun spot laid upon the table. It was, in fact, a beautiful painting about frost figures on a pane of glass.

1873. It remained about twenty minutes in the field of the telescope, and it looks just as I saw it. You notice all around it is much like the molten white iron in a great | very large margin. puddling furnace. You cannot see its ! sides. Each of those bright gossamer-like erted, directed and controlled. threads is about 6,000 miles long, and that spot covered more than a thousand million square miles of the sun's face. It had an | facts and figures about such matters. The area of five times that of the whole surface | people have, ever since the days of Darius of the earth. A little edge of it broke up Green and his flying machine, until very and dissolved while I looked at it, which lately, put such a one down as a visionary, was bigger than the whole United States. | without investigation of what he has to of-It was all in motion, and its seething par- fer. As for me, I have never said that man | Chicago Tribune. ticles were flying about at the rate of fifty | could fly by his own strength, nor have I of miles into the darkness below, up from | covered, but demonstrated by actual exwhirling vapor."

"How could you look at the sun so long, Mr. Langley, without hurting your eyes?" "had I used nothing but my eyes. I had first to invent an instrument to take the with the human freight, since we have place of the incomplete means used by Sir | now got mechanical power, may be re-William Herschel in order to see the sun | minded that though they themselves have by reflection. The rays come to the focus | got plenty of strength to ride a bicycle or of the telescope in blinding brightness, pro- to skate, this, though essential, is not ducing a heat sufficient to melt iron, but enough till they have added the special these rays have sides to them, and by mir- | skill and experience to use it, just as every rors placed at different angles they can be | man's legs are strong enough to ride a biso reflected that there is no more heat and cycle, while yet most of us cannot do so light than I choose to have. I have gazed | without much painful experience in learnat the sun for five hours at a stretch with | ing how to use and manipulate our strength, this instrument, and have felt no more fa- as many nowadays find out. So it is with tigue than I would have felt from reading a artificial flight. We have got the mechan-

"How about the heat of the sun, Mr. acquire the skill to use it in this new field." Langley? Can you give me some idea of

"Putting it briefly, it is enormous beyond thirty-seven thousand million tons of sonal opinion, then, I am willing to answer

nvestigations could not be made without water. But this heat which falls on the that I believe it altogether probable that oks and instruments, and these could not | earth is not a thousandth part of 1 per cent. | in the not very distant future, but how far be got without funds. I then began to look of what the sun sends elsewhere, and all distant I do not pretend to say, flying maaround for something which I could do | the coal beds of Pennsylvania, for instance, | chines, that is, not balloons, but heavy conwhich would be commercially profitable to | though they can supply the country for struction's actuated by machinery, will be the observatory, and the result was the hundreds of years, would not keep up this propelled very rapidly through the air, probinauguration of the time service, which heat during the one-thousandth part of a ably at first rarely and at great risk in furhas since spread all over the country, and second. Now, when you think that these | therance of the arts of war; later in introby which the clocks of our railroads and enormous figures are not exaggerations, but | ducing a great change in all human affairs | our cities are now regulated from an ob- within the truth, you have to give up the in the arts of peace." servatory at some central point. It is fa- idea of grasping the amount of the sun's

"Will we ever be able to use this heat

"That remains to be seen. The force is morning and at 4 in the afternoon of every | could at noontide drive all the steam enas I look back on it, I think I drove a steam engine which worked a business way, for a man chiefly versed in gine which it was thought might be used a haymow collection of hose supporters, ungreat centers of manufacture and of civili-

AERIAL NAVIGATION. I next asked Mr. Langley some questions as to aerial navigation. He was disinclined lished scientific writings on aerodynamics behind time, and it is only by averaging Mr. Langley has described his discovery of its irregularities that we know where to facts which greatly alter our former supposed knowledge on this subject, and that so, did they choke? In order to stop this though he has not there undertaken to deflood of inquiry and make all plain, the Tin flood of inquiry and make all plain and the tin flood of inquiry and make all plain and the tin flood of inquiry and make all plain and the tin flood of inquiry and make all plain and the tin flood of inquiry and make all plain and the tin flood of inquiry and make all plain and the tin flood of inquiry and make all plain and the tin flood of inquiry and make all plain and the tin flood of inquiry and make all plain and the tin flood of inquiry scribe any flying machine, as he is popularly supposed to have done, he has made ting on her "Jaegers," but the sketch, like "That question is a good deal easier to experiments which show that mechanical the Tin God's laconics, being only half truth, ask than to answer," was the reply. "I flight is far from impossible. Thus, by a Carpenter's Wife, Janitor's Daughter, have spent years in watching it and trying proper application and direction of the a-Year are writing to Ruth, protesting to learn something about it. I have discovered some things, but I should have brass plates upon the air with an incredibly off. The tenor (as well as the bass and to know a great deal more before I could | small display of energy. He did this many adequately answer that question. I spent | years ago, and at Pittsburg he made thou- hook the ends of the things to the faucet sands of experiments which show that there and crawl out. So more illustrations are are certain shapes in which matter can be nouncements concerning them, and during disposed so that the more rapidly it moves can tell what a day may bring forth. the waking hours of those three years the | through the air, in one sense, the less power sun's face was almost constantly before it takes to move it, and that solid models me. Have you ever looked at it in a tele- can be thus made to skim, as it were, along garments for 99 cents, he purchased seven scope? Do you appreciate what watching the viewless air, as a skater skims along pair-that is to say, quartets. On donning the sun is? In the first place, the face the surface of thin ice; the faster you go one quaret he sallieu forth, but Fate was unkind and the rains descended and beat of the sun in a telescope is almost always in either case, the less danger there being upon the man, and the Jaegers thereupon, quivering. Our atmosphere makes it seem to move to and fro in waves, and looking at it is like looking at a flickering candle, so that if its surface were ever so near it live knowledge of certain properties of the ground would be hard to make out the details, air, which have been only recently develop-But then it is, of course, really an enor- ed through these experiments, and that by mous way off, so that these details are also | these they navigate the air almost without effort in a way which there is no reason to think that it is impossible we can do, if not | Baltimore Letter in New York Times. by our unaided strength, at any rate by "I have tried in one of my popular writ- | means of such engines as are recently being to do that by a borrowed illustration," | ing built. With regard to this he spoke of replied Mr. Langley. "For instance, you | the fact that such birds even about Wash-

touch your finger to a candle, and in a lington may be seen rising and falling, soarfraction of a second your brain announces | ing up and sailing down, and moving in the pain. The sensation has traveled circles without any flapping of their wings. Said he: "Did you ever think what a stantaneously, but the speed has been physical miracle it is for such a bird as one measured. Suppose you had an arm which of our common turkey buzzards to fly in fixing itself to the tree limb as a habitation would reach from the earth to the sun, and the way it does? You may see them any and a home. Near the residence of the you could put the tips of your fingers on day along the Potomac, floating in the air that glowing mass of fire. It would be a with hardly the movement of a feather. little more than one hundred years (if you | These birds weigh from five to ten pounds; could live so long) before you could know | they are far heavier than the air which they that your fingers were being burned. Well, displace; they are absolutely heavier than the rays of the sun have to come all that so many flatirons. I suppose if men saw cannon balls floating through the air like last miles of their journey are through soap bubbles they would look on it as surwaves of heated air, which makes the sun | prising, if not as a miracle. The only reaseem to flicker so, while beyond and behind | son that we are not surprised at the soarall this almost all its brightest surface is | ing bird is that we have seen it from our in real actual motion, shifting here and childhood. Perhaps if we had seen cannon balls floating in the air from our childhood that of a cannon ball. These real changes | we should not stop to inquire how they did may last for a second or a minute, and spe- it any more than we do how the buzzards cial phenomena may occur in the twinkling | do it. I am speaking now, of course, not of birds which fly by flapping their wings, but

HIS DISCOVERIES. "There is a good deal of misapprehension about my own investigations in this respect," Secretary Langley went on, "but ever, that in order to do my work well, I what I have at least demonstrated is that it clings is not too slender, but that may heavy machines, not balloons, can be made be overcome by taking a long pole and which will produce enough mechanical powand as these studies went on, I learned to er to support themselves in the air, and to tletoe and lose many of its priceless berries draw and paint sufficiently well to make fly, though this is not saying that we have by letting it fall to the ground. The trees my records. Since then I have drawn hun-dreds of sun spots, and the works which I as to rise, advance and descend safely.

The public of the question. In that emerg-ency we have often used the rifle with good What is actually demonstrated rests on ac- | effect, a good shot cutting the parent stem tual experiments, repeated hundreds of that held the bunch of mistletoe to the times in the laboratory, but under condi- that there would be one to catch the bunch At this point in the conversation, Secre- tions not so easily repeated in the open after it had been shot off by the other.

"These experiments are in the nature of an engineer's measurements, giving things poses, and the luck it brings and the salu-12x14 inches in size, of what seemed to in pounds, feet and horse power, and by tations it invites are just as genuine as be a snowy surface, with a large black area | them I have shown that an expenditure of in the middle, crossed by strange lines of one horse power (if we can only regulate it | market. A pleasant Christmas rememlight, blending in fantastic outlines like the | so as to make the flight horizontal) will support about two hundred pounds, and at the mistletoe, and sometimes a nice, fat wild turkey or a brace of wild ducks will be "That," said he, "is a spot which I saw in same time carry it at the rate of fifty miles seasonably decorated with this shrub. an hour through the air.

"Now, there have recently been built steam engines which, with fuel and water white. The sun does not look like a ball of for a short flight, will give a good deal more fire when you see it in the telescope. It than a horse power and weigh a good deal appears more frozen than hot. It looks less than twenty pounds, so that we have a

"What I am trying to do is to establish by beauty in the drawing, nor can you appre- direct experiment the underlying principles clate its size. That spot which I have there of this future art of science, and, having drawn was so big that the earth could have | found the exact amount of force required, if been dropped into it without touching the possible, to learn next how it is to be ex-

"I know it is dangerous for any one to make any statement except in positive miles a second along the surface, under ever published the details of any flying which I could see probably some thousands | machine, but what I have not only diswhich came volumes of intensely heated periment, is that there is no doubt that machines can be made powerful enough to support bodies in the air which are thousands of times heavier than the air itself. "I could not have done it," was the reply, People who ask, if this is so, why such machines are not made at once to actually fly

"But will that day ever come, Mr. Langley?" I asked. "As to that," replied Secretary Langley, conception, for there is enough to warm two | "I have so far spoken only of what I have usand million worlds like ours, and ev- ascertained to be fact, and I want to disery minute there is enough of the sun's | tinguish between what is fact and what is heat falling on the earth to raise to boiling only my opinion. Expressing only my per-

ical power now, but we have still got to

FRANK G. CARPENTER. ART AND UNDERWEAR.

At Last Comes a Note of Protest Against a Class of Advertising.

Art and underwear are assuming strange ohn Wanamaker says that if he were now Madam's Own Journal to keep it out of the petite soubrettes-willowy blondes and

soprano) of all these letters to Ruth seems

MISTLETOE IN THE SOUTH.

The Young People Now Busy Hunting It in Its Swampy Home.

In all the country south of Mason and rivers, and ponds. A favorite place for it is ble that for years it has held its place and young men and girls who have gazed at it from below.

the little creek that winds around the one else is close to its discovery the first down and put it in a safe place for Christ-

There are two ways of getting this mistree. Generally we traveled in twos, so Our American mistletoe is not as fine as that imported, because the berries are smaller, but it answers all practical purany foreign article, and every year the South is sending larger quantities of it to brance from a Southern friend is a box of

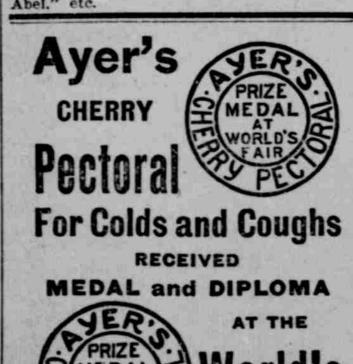
A Coxcomb Duke's Diamonds. New York World.

The Duke of Orleans has started a new fashion, which, it is sincerely to be hoped in the interests of good taste, will find no follower. He is in the habit of wearing a Tyrolese hat when skating at the "Niagara," in London, and of late has the plume of this picturesque head-dress fastened to the hat by an immense diamond clasp, which finds its counterpart in the ten-thoubeautiful daughter of one of the financiers who have recently made their pile in connection with South African speculations. Fortunately, the girl in question, whose hair is of a deep red, has a beautiful and well-shaped foot, so that the diamond buckles serve to attract the eye to some-thing infinitely more pleasing than the diamond hat brooch of the coxcomb Duke

Running No Risks.

"I'm not going to let this paper be caught in any more libel suits if I know it, by George!" exclaimed the city editor of the Morning Sensation, running his eye rapidly over a page of copy that lay on his desk.

And he inserted a word so that the sentence read, "Cain, the alleged murderer of



VORLD'S HAI

hristmas -OPENING-

Presents by the thousand for both young and old, and the merry jingle of the prices as they go tumbling down makes sweet music in the ears of holiday shoppers.

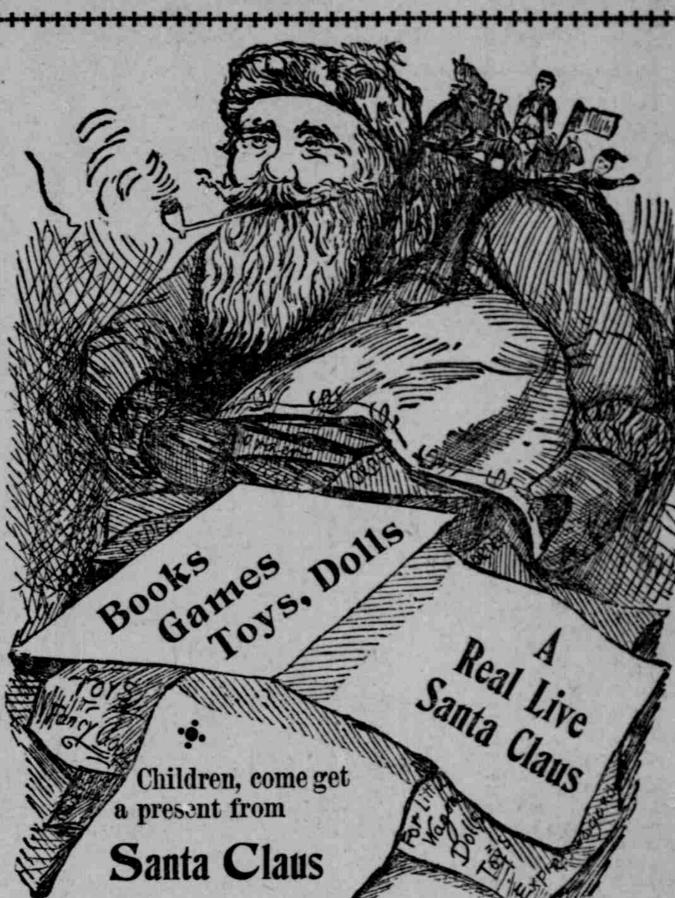
Santa Claus Arrived Yesterday

He will spend to-day visiting every Sunday-school in the city. He will peep into each one and will find out who the children are that go to Sunday-school, and will remember them when he distributes his presents.

Remember, Children,

Santa Claus will be our guest from now until Xmas. Come and see our real live Santa Claus. Bring your parents with you and he will give you each a present as a token of his love for THE LITTLE ONES.

Beginning to-morrow our store will be open until 10 p. m. every evening for the accommodation of holiday customers : : : : : : : :





Values for Xmas Trade

We have just received a large lot of Jackets of all kinds and all latest styles and materials.

Thousands of Jackets

At holiday bargain prices. Not a shoddy garment in the stock.

Perfect fitting and extremely well made. To Show Our Good Will and earnest intention to offer the best bargains of the day, we have decided to sell Our \$4 Jackets at\$2.50 | Our \$10 Jackets at\$7.00 Our \$5 Jackets at......\$3.00 | Our \$12 Jackets at......\$9.00

Our \$6 Jackets at......\$4.00 Our \$18 Jackets at......\$14.00 Our \$8 Jackets at......\$15.00 Ask to See These Goods

Our line of CAPES consists of some elegant things in Velours, beaded and fur-trimmed, Fancy Novelcles an : Beaver Cloths. We offer special holiday prices and are prepared to make it interesting

FINE FURS

Go hand in hand with this kind of weather. We have a nice line of Genuine Alaska Seals, Electric Seals Beavers. Perstan Lamb, Marten and Coney. We quote a few CUT PRICES to show you how 1 Genuine Alaska seal Jacket, fine French dye, ances grade, worth \$225, cut price \$145 1 Electric Scal Jacket, worth \$75, cut price, \$45 2 Persian Lamb Jackets, worth \$45, cut

See our MUFFS and BOAS. We have these in Seal, Astrakhan, Mink, Stone Marten and Coney



The Children Know a Thing or Two

And they knew that we meant what we said when we offered

2,000 Tam O'Shanters

They won't last long. There are some more for next week and, REMEMBER, not one of them worth less than 50c, and some worth 75c and \$1. See them in the window. See our line of Misses' and Children's Long Cloaks and Short Jackets, all prices and all styles.

Tailor-Made Suits

Another deep cut in prices on Ladies' Suits. \$18 Suits at \$10.50 \$20 Suits at \$14.00

Silk Waists

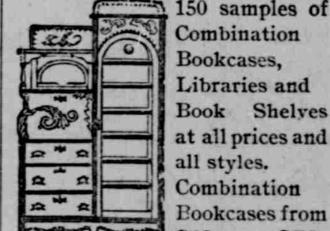
Flannel and Cloth Shirt Waists :::: Wrappers and Tea Gowns Our line of Novelties, Serges, Boucles and Rough Effects cannot be e junled.



See our magnificent display of Parlor Furniture and odd pieces in Parlor Goods. Fifty suites of the finest goods ever shown in the city in Mahogany, Curly Birch and Oak, and in all the new coverings. Suites from \$15 up to \$200. We quote special holi-day prices and will sell Our \$75 suite at\$53

Our \$50 suite at\$38 Our \$25 suite at\$18 Proportionate prices on all Parlor Goods, including Odd Rockers, Di-vans, Corner Chairs, Reception

assortment of CHRISTMAS GOODS.



Libraries and Book Shelves at all prices and all styles. Combination Bookcases from \$10 up to \$50.

Libraries from \$3.50 up to \$30. Bookshelves from \$2 up to

Big reduction in Ladies' Dressing Tables and Writing

\$4.50 Rockers at\$2.75 Our \$6, \$8 and \$10 Rockers at \$1.90 We only have a small quantity of If you want to make somebody's Christmas a happy one, buy them one of our Sideboards, or China Closets, or Extension these goods at these prices. Children's Rockers, Folding Beds, Tables, or Center Tables, or something from our mammoth Cribs and High Chairs in different

Our Fine

Clothing will be of particular interest to the holiday trade. READY-MADÉ Clothing has been denounced by thousands of people, but this denunciation is caused by the cheap and shoddy goods that is thrown upon the market. We are not in this kind of a market, and we are prepared to establish an entirely different opinion as regards readymade goods : : : : :

Jacts

We guarantee a perfect fit. We carry a complete line of

We handle only up-to-date colors and grades. We refund money if purchaser



ARE ALL THE RAGE

We have them. All the best things. Plenty of them. 100 Men's Suits, all sizes, in brown, checks, stripes and novelties, and gray and blue Cheviots, at \$10.00

125 Men's Suits, all sizes, in blue, black, gray, brown and novelties, in Cassimeres, Meltons, Worsteds, Cheviots and Silk Mixtures, worth \$20, \$18 and \$16, at.... \$13.50

Other Suits in all the late styles up to\$35.00

Men's and Boys' Overcoats

Large stock of all shades, and sizes, and qualities, at a big reduction. All you have to do is to ask for our BIG BARGAINS and we are ready for you.



Boys' Xmas Suits

We have all varieties, all kinds and all sizes, from

75 Cents up to \$8.00.





200 different styles in Rockers to select from in Mahogany, Oak, Birch,

Willow, Upholstered and Cane. We have everything made in Rockers from 75c to \$40. \$3.50 Rockers at\$2.25

styles and all prices.

150 Dinner Sets to select from in all the newest and daintiest of decora-tions at \$7, \$12, \$15, \$25 and \$300. If you want to make a present of any-DON'T MISS SEING OURS Some beautiful things in Fine Imported China Plates, Cups and Saucers, Tea Sets and After Dinner Coffees

French and German.

A Car Load of Cut Glass

Received and ready for holiday buyers. We have the finest display of Cut Glass in the city, and at most LAMPS make elegant and appropriate presents. See our Banquet, Stand and Piano Lamps and fine assortment of

Shades. 150 samples at prices lower